Implementing Adaptation

Imagining Next Steps for the Vermont Agency of Natural Resources' (VT ANR) Climate Change Adaptation Framework

Product of Middlebury College Environmental Studies Senior Seminar (ES 401)
Led by: Catherine Ashcraft and Diane Munroe
December 2013

Written by: Emily Attwood, Andrea Cruz Quiroz,
Olivia French, Molly Rose-Williams and Camille Seyler

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Acknowledgements

We would like to thank the following individuals for their time,
support, and thoughtful input over the course of our project:

Our project partner Brian Woods, of the VT ANR
Department of Environmental Conservation

Our community partners Elizabeth Courtney, co-author of Greening Vermont,
and Victor Guadagno, Founder and President of Bright Blue EcoMedia

Our ES 401 professors Catherine Ashcraft and Rebecca Gould

Our ES Community Coordinator Diane Munroe

Vermont Folklife Center Co-Director and Director of Education Greg Sharrow

Our ES 401 peers

And last but not least, our many interviewees
(names withheld to protect anonymity)—
Your input made this process so enriching

Although the information in this document has been funded in part by the U.S. Environmental Protection Agency under assistance agreement to Bates College, it may not necessarily reflect the views of the Agency and no official endorsement should be inferred.

Photo Credit: Andrea Cruz Quiroz

Executive Summary

VT ANR is based in Waterbury, VT, and is committed to promoting environmental stewardship, conservation, and education throughout the state. In their mission statement, they note that their work builds upon Vermonters' shared sense of environmental responsibility. This September 2013, VT ANR published a Climate Change Adaptation Framework assessing the vulnerability of four natural resource sectors to climate change: forestry, wildlife, fisheries, and water resources. The Framework also proposed adaptation strategies—methods for managing these resources to reduce the negative effects of climate change. Adaptation strategies like those the Framework proposes help communities build resilience to climate change by increasing their capacities to resist, respond to, and recover from environmental damage. Already, VT ANR's framework has facilitated communication and coordination between scientists, policy makers, and Vermonters concerned about climate change. The Framework can therefore be considered a first step in VT ANR's statewide climate change adaptation planning effort.

The goal of this report is to recommend next steps for VT ANR as they push their framework toward eventual implementation. We have presented an analysis of what facilitates and hinders the actual implementation of adaptation plans and tailored our findings to specifically inform VT ANR's continued adaptation planning process. We believe that in publishing their framework, VT ANR is already preparing Vermont for a bright future despite an uncertain climate. We hope this report helps the Agency continue to make meaningful, impactful strides toward resilience.

Project Context

THE VT ANR CLIMATE CHANGE ADAPTATION FRAMEWORK

The world is changing. Once a fringe issue, climate change has become a central challenge of our time. Its effects are already beginning to be felt acutely in Vermont and show no signs of slowing down. More frequent storms and increasingly volatile weather events such as Tropical Storm Irene in 2011 have alerted Vermonters that, in the face of coming changes, inaction is not an option.

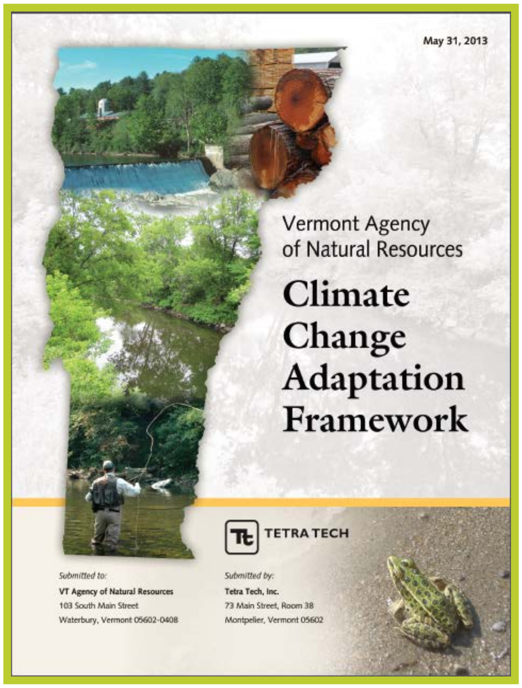
At the center of these conversations are Vermont's natural systems. The VT ANR Climate Change Adaptation Framework tells us that "Changes to climate will directly affect Vermont's natural resources, the services they provide, and the natural heritage they bestow" (VT ANR Framework 2013: i). Therefore, the ability of Vermont to not only survive but thrive in an uncertain future is inextricably linked with the resilience of the state's natural systems and their ability to adapt to the coming changes.

VT ANR has been a leader in working to build resilience in Vermont's natural systems and in facilitating their ability to adapt. VT ANR's Climate Change Adaptation Framework represents one significant step in that effort. Published in September 2013, the Framework was compiled through the collective effort of experts from a diverse range of scientific fields—from river scientists to ecologists to lake or forest specialists—and was authored by the environmental consulting firm Tetratech. Framework stakeholders met over the course of two separate workshops to discuss the vulnerabilities of Vermont's natural systems to climate change and develop specific adaptation strategies to combat adverse effects or take advantage of beneficial changes.

The published Framework addresses climate change impacts on four natural resource sectors: wildlife, fisheries, forestry, and water resources. For each of these sectors, it provides a comprehensive vulnerability assessment—which describes the types of changes expected—and adaptation strategies, which are steps suggested to help manage or reduce effects. Overall, this framework aims to increase resistance, promote resilience, enable transformation, and facilitate realignment in Vermont's natural systems.

VT ANR's Adaptation Framework represents Vermont's most comprehensive assessment to date of how climate change's anticipated changes will affect the state's natural systems. Therefore, the potential this framework offers in preparing Vermont to thrive through an uncertain future cannot be understated—it may very well be a blueprint to a livable future.

Project Context (continued)



May 31, 2013

Vermont Agency
of Natural Resources

Climate Change Adaptation Framework

TETRA TECH

Submitted to:
VT Agency of Natural Resources
103 South Main Street
Waterbury, Vermont 05602-0408

Submitted by:
Tetra Tech, Inc.
73 Main Street, Room 38
Montpelier, Vermont 05602

OUR PROJECT

The authors of this report are five Middlebury College students. We undertook this project as part of our capstone seminar for the Environmental Studies major. The course was structured around the theme of "imagining Vermont's environmental future." Specifically, throughout the course of the semester we worked to investigate the ways in which the state of Vermont can address—and already is addressing—climate change. Further, we examined the power of narratives in helping to build Vermont's resilience.

In this endeavor, the class paired with Elizabeth Courtney, former executive director of the Vermont Natural Resources Council and author of Greening Vermont: The Search for a Sustainable State, Vic Guadagno, founder and president of Bright Blue EcoMedia, and Greg Sharrow, co-director and director of education at the Vermont Folklife Center, a center "dedicated to preserving and presenting the cultural traditions of Vermont and the surrounding region" (Vermont Folklife Center), to develop media that showcases efforts to increase resilience in Vermont. The class was also split into six smaller teams, each of which paired with an organization that is actively addressing climate change in Vermont. These organizations were Vermont Energy and Climate Action Network (VECAN), Vermont Interfaith Power and Light (VIFPL), Vermont Council on Rural Development (VCRD), Resilient Vermont, and the Vermont Agency of Natural Resources (VT ANR).

We paired with VT ANR to work with them on imagining potential next steps for their recently published Climate Change Adaptation Framework. Adaptation planning is an extremely important step in coordinating efforts to build collective social and ecological resilience. However, though the importance of planning is increasingly being recognized and adaptation planning efforts are multiplying, implementation of these plans resulting in tangible impacts continues to pose a significant challenge. Therefore, we set out to research the transition in adaptation planning from framing to implementation, considering both common pitfalls and successes throughout the adaptation planning process. We hoped that, in doing so, we could help enable VT ANR to use their framework to achieve impactful results.

Project Context (continued)

We researched adaptation planning efforts both in Vermont and nationwide, and interviewed individuals involved in many of these efforts. We also interviewed staff members at VT ANR and individuals who participated in VT ANR's recent multi-stakeholder framing workshops.

We aimed to build a base of knowledge in order to:

1. Provide VT ANR with a comprehensive assessment of the common causes of adaptation planning successes and failures
2. Provide VT ANR with information regarding the reflections of the stakeholders involved in creating the Framework
3. Make our own recommendations for next steps based on our findings

In this report, we outline our project and methods in greater depth, discuss our key findings with regards to adaptation planning processes in general and VT ANR's framing process more specifically, and propose several potential next steps for ANR. We also include a comprehensive list of the plans and resources that informed our research.

In addition to providing this report on our findings to VT ANR, we created a short video using footage from our interviews, and an infographic to accompany the video. Both the video and infographic are intended to educate the public on the ideas of 'adaptation' and 'resilience', and the adaptation planning process. For more information on the video and infographic, refer to "Companion Materials" on page 21.

Over the course of this endeavor, our main contact at VT ANR has been Brian Woods of the Department of Environmental Conservation. Environmental Studies professors Cat Ashcraft and Rebecca Gould, as well as staff-member Diane Munroe, advised us throughout the project. All findings and analyses are our own, based on original research.

Methods

To gain an understanding of the diverse manifestations of climate change adaptation planning, we researched planning efforts in Vermont and nationwide. We consulted a total of 26 adaptation frameworks and plans, each of which considered adaptation measures at varying geographic scales, from municipal to county to state. These frameworks and plans are listed in Appendix A. As discussed earlier, we discovered early in our research that although they serve as a necessary step toward resilience, adaptation plans and frameworks are rarely translated into public policy. In order to better understand this disconnect between planning and policy, we interviewed 10 stakeholders involved in adaptation planning in varying capacities. Our interviewees included individuals working on adaptation efforts across and outside of Vermont, VT ANR staff, and participants from VT ANR's multi-stakeholder framing workshops leading up to the release of the VT ANR Climate Change Adaptation Framework.

We asked interviewees about the difficulties, triumphs, and benefits of the adaptation planning process, including what they believed helped and hindered the creation and implementation of adaptation frameworks and plans. We asked those involved in developing VT ANR's framework more specifically about their experiences during the framing process and what they imagined for the Framework moving forward. All interviews were loosely structured in order to facilitate genuine conversation and leave room for thoughtful, uninhibited feedback. See Appendix B for specific interview questions used.

In addition to our research and interviews about adaptation planning within organizations, agencies, and at the state level, we also spoke to four Addison County, VT business owners particularly vulnerable to climate change. We asked these individuals how climate change is impacting their businesses and how they plan to adapt their business models—if at all—in light of climate change. Although these interviews did not directly inform our analysis of VT ANR's framework, they helped us understand climate change adaptation on an individual scale and gave us a taste of Vermonters' environmental ethic. Relevant segments from these interviews can be found in Appendix C on page 26.

Findings

CONDITIONS FOR SUCCESS IN IMPLEMENTATION

As discussed above, we began our research by reading many adaptation plans and, whenever possible, interviewing individuals involved in those planning efforts. Our goal through this research and interviewing was to build a deeper understanding of what conditions enable the successful translation of adaptation planning into action and policy. Over the course of our research, we have found that successful adaptation planning efforts almost always involve strong scientific backing, collaboration between a wide array of stakeholders, public education and engagement, strong leadership, access to funding, and coordination of efforts across multiple scales of government.

Table 1, found in Appendix D on page 27, compares some key characteristics of eleven of the plans we studied. The plans included in the table are those we found to have resulted in the most tangible action (full citations for these, and all plans we studied, may be found in Appendix A on page 22). Trends presented in the table illustrate the conditions for success presented above and which are discussed in more detail below.

1.1 STRONG SCIENTIFIC BACKING

According to Walker et. al. in their report released by the Adaptation Working Group of Madison, WI, uncertainty poses one of the biggest challenges to successful adaptation planning efforts. They define two types of uncertainty: predictive uncertainty and values uncertainty (Walker et. al. 2010: 5). Predictive uncertainty originates from how complicated and unpredictable climate change is. Though evidence shows that the climate is changing, it is very difficult to quantify or predict that change. Values uncertainty arises because all adaptation choices are guided by a sense of value. Considering climate change is a global challenge, every person affected by it will have different priorities about what is worth preserving and therefore what kind of response is warranted.

Walker et. al. propose that strong scientific backing for an adaptation plan is key in addressing both of these types of challenges (Walker 2010: 6). Not only does this backing help dispel some of the predictive uncertainty, it also inspires trust in the merit of the planning process. Further, it helps to provide a common ground for all stakeholders to stand on, regardless of how their values may differ. This common ground serves as an invaluable place to begin the conversation and the collaborative process of exploring values (Walker et. al. 2010: 6). The value of strong scientific backing is apparent in examining the plans presented in Table 1. Every plan engaged a range of scientific experts in their drafting process, thereby providing a sound foundation for the proposed adaptation measures to build on.

Findings (continued)

1.2 MULTI-STAKEHOLDER COLLABORATION

Another key to any fruitful adaptation planning process is collaboration among a wide array of stakeholders. Returning to the idea of 'values uncertainty' presented above, dialogue in the framing process provides a forum to begin exploring and reconciling differences in values (Walker et. al. 2010). This reconciliation process is crucial for plan implementation because it provides a broad base of support for the specific actions that need to be carried out. Further, having a wide variety of input from diverse areas of expertise helps to ensure that the measures developed are feasible and significant. Table 1 supports the finding that collaboration between many stakeholders helps to build a successful adaptation plan. Every plan included was the result of a collaborative process.

1.3 PUBLIC EDUCATION AND ENGAGEMENT

Public education and engagement is also an important component of many successful planning efforts. Although creating a plan does not necessarily require public involvement, successful implementation of plans often hinges on public engagement. Not only can public interest in adaptation planning help to expedite legislative processes, it can also provide crucial support in local implementation measures. One interviewee suggested that after Tropical Storm Irene, Vermonters expressed more interest in her climate change adaptation work and even spearheaded similar efforts. Because it builds consensus around the importance of the work being done, public awareness can also be key in securing funding and committed leadership.

The Ashuelot River Watershed adaptation plan and Sustainable D.C.'s adaptation plan for Washington D.C. both include outreach and education efforts as part of their adaptation strategies. These plans stress that only with an educated, supportive public can goals of ecological, social, or community resilience be met. For example, the D.C. plan makes clear that although "The District government is leading this implementation effort…only with the help of residents and the private sector will we achieve our most important goals. We need everyone to take part; individual actions can—and will—add up to big change" (Sustainable D.C. 2013: 6). Similarly, Resilient Vermont's "Roadmap to Resilience" names individual homeowners and local governments as key collaborators in adaptation and stresses the importance of Vermonters "knowing their risks" in regards to climate change (Resilient Vermont 2013: 7). As our interviews with Addison County, VT business owners suggest, many Vermonters are already aware of climate change and receptive to the positive power of adaptation planning, at least on an individual scale (See Appendix C).

Findings (continued)

1.4. STRONG LEADERSHIP AND ACCESS TO FUNDING

The most successful plans we researched included guidelines for implementation. These guidelines generally involved assigning leadership responsibilities and devising funding strategies for each of the specific adaptation measures proposed (see Table 1).

Representatives from the Manomet Center for Conservation Sciences attributed much of the success of their plans to the fact that each plan was developed in conjunction with a community partner that already had jurisdiction over the area the plan pertained to. These community partners were poised to take immediate action on the plans' recommendations, and were capable of prioritizing the financial support of implementation measures. One representative from Keene, New Hampshire's adaptation planning efforts echoed this sentiment, explaining that without strong leadership from the town's planning committee and specific guidelines for funding, none of the guidelines in Keene's *Adapting to Climate Change: Planning a Climate Resilient Community* can be implemented.

1.5 COORDINATION OF EFFORTS ACROSS MULTIPLE SCALES OF GOVERNMENT

Many of our interviewees expressed frustration about how arduous it can be to incite impactful adaptation on a large scale. "It is very difficult at a statewide level," said one respondent of adaptation planning. However, interviewees also agreed that attacking adaptation exclusively at a local level precluded more coordinated and widespread efforts. Interviewees tended to suggest a multi-level approach as most effective.

Our research of successful plans supported this outlook. For example, while both California and Washington state have published statewide adaptation plans, they include within their plans resources and adaptation measures to be used by local actors, thereby encouraging multi-scale action. In the case of California, this approach has encouraged a large amount of local initiatives to emerge. Similarly, the adaptation plan for the Ashuelot watershed in New Hampshire includes implementation directions for actors at municipal and regional levels. Structuring a plan with multiple levels of implementation in mind helps to support impactful action because it facilitates strong leadership and multiple sources of funding.

Next, we discuss these findings and their implications for VT ANR's Climate Change Adaptation Framework and the Agency's continued adaptation planning process. In our discussion, we include reflections upon both the framing process and the product itself.

CHALLENGES MOVING FORWARD

In light of our findings regarding adaptation planning in general and our conversations with VT ANR stakeholders, we identified six key considerations that we believe should inform VT ANR as it moves forward with the Framework.

2.1 LENGTH AND DENSITY OF THE FRAMEWORK RESULTS IN A LIMITED READERSHIP

Our research shows that in order for climate adaptation measures to be pursued outside of government agencies at the town level, adaptation planning must be both relatable and digestible to community members. According to one of our interviewees, making a plan concise and approachable is the first step towards successful implementation of adaptation measures: "Well, it has to be written in English...and short enough that it's approachable to the general public...Without a basic level of public knowledge and support it's hard to get anything done." We found that frameworks and plans with limited scopes tended to be most concise, clear, and palatable. Frameworks and plans that focused on a specific geographic feature or town, like the *Forest and Water Climate Adaptation* plan for the Ashuelot River Watershed or Keene, New Hampshire's *Adapting to Climate Change: Planning a Climate Resilient Community* were particularly successful. Neither of these plans exceeded 50 pages and in both, information flowed easily with recommendations for adaptation as the focus.

The density of VT ANR's 122 page framework makes it less accessible to those not intimately involved in the drafting of it, like the general public. Even the stakeholders who participated in VT ANR's framing workshops expressed being intimidated by the length of the Framework. One explained, for example, that he hadn't read it because, "It's a little unwieldy, something of that length." Because the Framework covered so much material, the actual adaptation measures lost focus or priority. Sharing of information between government agencies, local officials, and citizens is especially important in Vermont, where many policy decisions are made at the town level. Our stakeholders supported this perspective. As one interviewee said,

> Having a conversation with the public is always important to us. That's why the stakeholders' input is really important because they can identify a need for better communication…that the Agency may or may not realize or have the resources to address directly.

Although many Vermonters acknowledge the reality of climate change and understand its effects, in order for productive change to come of that understanding, potential solutions to climate change—like adaptation plans—must be made understandable too.

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Findings (continued)

2.2 UNCLEAR AUDIENCE FURTHER LIMITS THE IMPACT OF THE FRAMEWORK

Not only did our group find the intended audience for the VT ANR Framework unclear, our discussions with stakeholders also suggested that they were not sure for whom the Framework was created or in what context it could be most useful. One interviewee stated this confusion quite explicitly, saying: “Who’s the audience for this? I don’t know.” In addition, some stakeholders did not feel as if the final product of their collaborative efforts was directly relevant to their own work. One stakeholder commented, “It was hard to wrap your brain around…where do we go from here? When I went into this adaptation framework effort, I didn’t have a clear picture of what I wanted to come out the other end, but when I got there, I felt like I wanted something more specific than we got.” We observed this lack of clarity diminishing the enthusiasm stakeholders had for continued involvement in the Framework’s next steps.

In the successful frameworks and plans that we researched, having a clear audience was often fundamental. For example, the *Climate Change Adaptation Plan for Allen Whitney Forest, Maine*, authored by the Manomet Center for Conservation Science has experienced an impressive degree of implementation and follow-through. In a conversation with one of the plan’s authors, he described that one of the challenges in drafting the plan was doing so in conjunction with the foresters at Allen Whitney, because they brought a different set of concerns and values to the table than the Manomet scientists. However, in explicitly drafting the plan for them, the plan had built-in leadership for the implementation phase, and was ultimately very successful over the long-term. Therefore, we suggest that the lack of clear audience for the VT ANR’s framework poses two primary challenges: it decreases the willingness of stakeholders to commit to continuing to work towards the framework’s next steps and it jeopardizes successful implementation through a lack of defined leadership.

2.3 ACTION ON MULTIPLE SCALES OF GOVERNMENT IS A NECESSARY CHALLENGE

Our interviews revealed that a common complication in adaptation planning and implementation is how to reconcile town, state, and national government regulation. Considering climate change affects every state and town differently due to variations in built infrastructure, economies, and natural resources, it is important to tailor adaptation efforts to individual communities. As one interviewee said, "You can look at the other plans, you can look at the issues that the other states have addressed, and then you come back to your own state and say, 'Now how does this pertain to me?'" Stakeholders tended to agree that local action was most efficient, especially in a state like Vermont where community members are particularly engaged in their local governments. However, many stakeholders also believed it was impossible for local governments to act effectively without support and direction from larger government bodies.

One interviewee explained,

> That's the next critical part: Leadership from the top, education and resources for the folks confronting these problems in their own communities so they understand what they have to do and have the tools to do it and the resources money and otherwise to execute.

Another interviewee said,

> Everybody's got to talk at all levels, federal government, state government, and municipal government, community government. And then we also have to pay attention to colleges who are doing research…it's got to be a partnership between academic, municipal, state, and federal government.

This partnership between small and large scale governments can be complicated, especially if town governments are reluctant to top-down regulation. As one interviewee noted, "If you have a regulatory authority, you can go in in a sort of a heavy handed way and say "You just can't do this" and there's a place for that, but there's also a lot of resistance to being regulated—we all are resistant to that." Another interviewee asked, "Vermont has unique challenges. The way it is set up, a lot has to happen at the town level. Each town is different so how do you go about trying to get those towns or groups within those towns to implement some of what you've proposed?" Although coordinating these many different scales of government is a challenge within itself, it is necessary in order to create successful, lasting climate adaptation policy.

Findings (continued)

2.4 LACK OF OWNERSHIP RESULTS IN MEDIOCRE LEVELS OF COMMITMENT TO THE FRAMEWORK'S FUTURE

Many stakeholders involved in producing the VT ANR Framework downplayed their involvement during our interviews. One interviewee admitted, for example, "I didn't really develop much ownership or authorship of the framework at all." Another said, "It's not really about me." We believe this reluctance to claim ownership of the Framework was caused in part by participants' demanding commitments outside of VT ANR's adaptation planning effort. Another possible cause is that these stakeholders did not in fact author the Framework; rather, their ideas were organized by Tetra Tech to form the final product. Thus, workshop discussion generated many original ideas but did not include stakeholders in final product creation. For this reason, it is unsurprising that many stakeholders feel disconnected from the Framework.

Unfortunately, this lack of ownership translated into low levels of commitment to push the Framework forward, along with limited creativity around what next steps for the Framework might be. Stakeholders had no particular plans for their involvement in implementation nor did they express specific ideas for next steps. Not one stakeholder or even group of stakeholders was prepared to act as a leader in implementing the Framework.

Our research indicates that undefined leadership poses a challenge to successfully translating frameworks and plans into policy. The authors of Keene, New Hampshire's *Adapting to Climate Change: Planning a Climate Resilient Community* recognize this, and recommend that the city hire a Sustainability Officer to ensure the goals outlined in the plan are actually implemented. The Madison Wisconsin Adaptation Working Group's report on Adaptation Policy similarly stresses the centrality of strong, defined leadership to the success of any adaptation planning effort (Walker et. al. 2010). We believe this lack of ownership will be important to address as VT ANR looks to build on the progress made in the creation of the Framework.

2.5 LOW EXPECTATIONS CONTRIBUTE TO LACK OF OWNERSHIP

Our interviews revealed that many individuals involved in contributing to the VT ANR Framework entered into the project with low expectations for the final product's potential utility. One interviewee admitted, "I've worked here for a long time and just seen plans come and go…A lot of folks I work with would probably be very upset with that attitude. But I haven't seen too many big, thick reports that last more than a year or two."

For most stakeholders, success for the Framework did not necessarily mean implementation at all. As one interviewee said, "How do you define success?...Maybe just bringing all those people together and getting them to think about things they hadn't thought about is a success."

Another interviewee explained,

> I think seeing communities...start to have these conversations, start to believe that the science is true about climate change…that to me is success. Would I like to see stronger bridges and better roads and more marshes that buffer all these storms? Yes, but those are on the ground things. We aren't there yet as a state or a nation because we have to first start talking about it…before we can start putting it into our town plan.

The initial conversation generated by VT ANR's framework is certainly essential to future "on the ground" changes, but those future changes are perceived as distant. Another interviewee said, "I think success gets measured in a lot of different ways…If we never get to a statewide process or a statewide plan, but if we have a hundred little victories, then that's good enough for me." We believe stakeholders' standards for success were low in part because of their collective lack of ownership over the Framework. In turn, a general lack of ownership perpetuates low expectations.

Considering the Framework is the first step in VT ANR's adaptation planning effort, that the science around climate change is still evolving, and that passing environmental policy is a notoriously slow-moving process, it is no surprise that stakeholders set minimal standards for the Framework's outcomes.

Findings (continued)

2.6 *COLLABORATION: A (BIG) LITTLE VICTORY*

A major theme running throughout our interviews, both in regards to the VT ANR framework and other adaptation planning efforts, was that collaboration is central to the conversation about climate change. It may be challenging, but collaboration is also necessary and can be understood as a success in itself.

Collaboration posed several challenges to stakeholders involved in crafting VT ANR's framework. The large number of people involved in drafting the Framework made scheduling workshops difficult, intensified time constraints, and likely contributed to the lack of ownership our interviewees felt over the Framework's future. Stakeholders also explained that considering the voices of many individuals from diverse backgrounds and areas of expertise made it difficult to craft a unified final product. As one participant put it, "There is a place at the table for everyone when it comes to climate change adaption, it's just…how do we get work done so that we are not just all talking at each other?"

Another interviewee explained the nuanced difficulties of collaborating across sectors for water quality management:

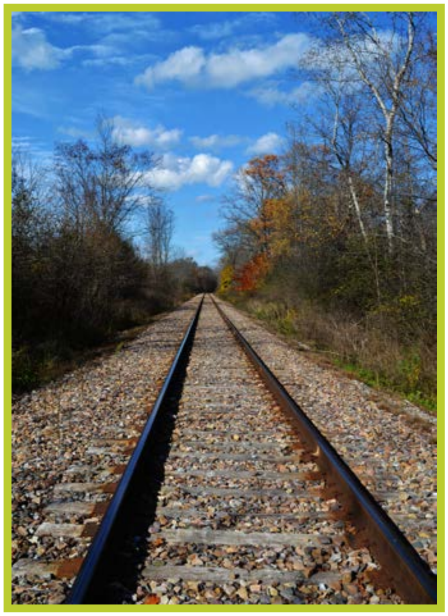
> The agricultural agency cares about water quality, but their major mission is to enhance farming as an economic enterprise in the state. And the transportation agency, they care about water quality too, but their main job is to have a good road infrastructure…so it's good to remember that people do care about water quality, but it's not their first, not their main job. It's sort of a challenge to find that common ground.

This perspective highlights the difficulties of collaboration in both adaptation planning and implementation. Clearly, collaboration will continue to be necessary but complicated for VT ANR beyond its current framework stage.

Findings (continued)

Our research revealed that there are many people working to combat climate change in Vermont but that their efforts are often isolated. Stakeholders tend to collaborate with people whose work closely relates to their own and can therefore become blinded to other aspects of climate change adaptation or miss opportunities for creative solution-building. One interviewee noted, "In science you see a partitioning of expertise, and climate change is such an overarching issue, you need to get those different experts to start talking together in a way that they might not normally." Another interviewee admitted that climate change work "Exposes how there's a lot of different groups working on things…but there's some ways they can work together that they maybe hadn't thought of before. And so climate change is this avenue for connecting people." Although climate change can be alarming, the complexity of it also serves as an opportunity for scientists and policy makers to share information and thereby cultivate a deeper, more integrated understanding of the environment moving forward.

Indeed, although VT ANR stakeholders found collaboration difficult at times, they deeply valued it. Their comments suggested that conversations with people they did not otherwise have reason to talk to inspired them to think more broadly about climate change. These conversations also informed their daily work and deepened its meaning. One interviewee explained, "I think all of us got a little bit of an education going through the workshop portion of the framework…we learned from each other." Another interviewee summed up, "The most exciting thing I would say...how do I put it? Simply being part of a collaborative process that spanned a wide range of agencies and partners and NGOs and stuff, all working toward trying to figure this out." Clearly, our interviewees' many new connections will be helpful for their future environmental work, whether related to VT ANR's Framework or not.



Proposed Next Steps

Based on the findings presented above, we make two main recommendations for VT ANR when considering the future of its Climate Change Adaptation Framework:

MORE COLLABORATION, FEWER PLANS

As discussed above, stakeholder participants found the process of collaborating incredibly rewarding. These rewards alone (interdisciplinary discussion, relationship building, etc.) justified the hard work and resources that went into creating the Framework. Much of the money spent throughout the process was paid to Tetratech the firm who organized many of the meetings and authored the Framework based on stakeholder dialogue. It is important to note that these benefits could be gained *without* creating a final product like a framework or plan, thus saving money that could potentially be redirected towards actions with more tangible and direct impacts in the future. We recommend that as the Agency moves forward in its efforts to address climate change it continues to organize multi-stakeholder dialogues about climate change adaptation efforts. In this way, the Agency can reap the "process" benefits for less, and support climate change adaptation efforts all over Vermont and the Northeast simply by providing a context for knowledge to be shared and valuable connections to be made.

REPACKAGE PLAN FOR DIFFERENT AUDIENCES

Although the Framework contains an amazing amount of useful information, many stakeholders found that it was too large to be easily used. The length of the document coupled with its relatively technical language rendered it unapproachable for concerned citizens looking to adapt on a local scale. It would be helpful for both stakeholders and individuals if the Framework came in different iterations. For instance, a more user-friendly version (shorter with less technical language) could be distributed to Vermonters looking to get involved with adaptation efforts on an individual level, like the Addison County business owners we interviewed. Another option could be a version that focuses on one sector at a time rather than all of Vermont's ecosystems. This would be useful to professionals in different fields and to Agency leaders who could use the document to coordinate the Agency's wide variety of adaptation efforts.

Conclusion

One of the most inspiring and consistent findings from a variety of sources in our research and interviews is that Vermont is a particularly special place for adaptation efforts to occur. More specifically, Vermont is celebrated for its rich, beautiful landscapes, landscapes that have remained relatively unscathed despite modern expansion and urbanization. The abundance of natural resources in Vermont in conjunction with Vermonters' collective belief that these resources should be respected and cared for sets the state apart from the rest of the country. As explained by one interviewee, "The combined assets of our relatively intact natural resources, our small population, our geographic area, makes it easy for us to feel cohesive and be cohesive and also sets us up for having the natural systems in place to support us." This serves as a strong foundation for adaptation planning in Vermont. We believe these assets will enable the state to build toward an ever-more socially and ecologically resilient future.

Over the course of our research it became clear that, beyond its plentiful natural resources, Vermont is filled with individuals who are enthusiastic, dedicated, and motivated to embrace climate change. As evidence of the environmental ethic VT ANR notes in their mission statement, Vermonters are already responding to climate change at the local level. One of our interviewees stated, "Vermont is one of those places where people find themselves...maybe because there are fewer people. There's a lot of things that feed into it, but we value each other for who we are and what we bring to the table much more than other places. We don't necessarily judge people by their car or their house… It's kind of a place that values people". This intrinsic belief that individuals can and will make a difference both locally and statewide is an asset that will serve Vermont well as future challenges unfold.

Although VT ANR's framework represents the beginning of the conversation around adaptation in the state, with its strong local government, environmental ethic, and collaborative spirit, Vermont is set to be a leader in adaptation planning efforts moving forward. As one interviewee mentioned, "In many ways people lament the fact that we've not responded to the extent we need to in order to address climate change. That's certainly true, but it's also true that we've done an awful lot to change the way we do business, from the federal level all the way down." These changes, regardless of how small, are each important stepping stones within the adaptation process. Indeed, adaptation does not occur overnight, and it is work that will continue for many years. As one interviewee stated, "There is no resilient end point where we can say…we've achieved climate resiliency… I don't think that there is an endpoint. Adaptation [planning] is an iterative process…It is something that we are going to be doing from here on out." One thing is clear: adaptation planning is impossible without thoughtful, engaged individuals who will continue to seek out new practices and keep an open mind about where the adaptation process may lead. Luckily, Vermonters are just that.

Companion Materials

In addition to this report for VT ANR, we have also created a short video with footage from our interviews and an infographic (Appendix E) meant to accompany the video. Both the video and graphic will be on exhibit at the Vermont Folklife Center in 2014, and may be included on Elizabeth Courtney's proposed *Greening Vermont* on-line journal.

The video provides viewers with an introduction to the concepts of 'resilience' and 'adaptation,' along with an overview of adaptation planning in Vermont. It discusses what an adaptation plan is and explains the role of adaptation plans in preparing for climate change; briefly profiles adaptation planning efforts underway in Vermont, including the VT ANR Climate Change Adaptation Framework; and introduces several challenges and success of adaptation planning efforts. Our hope is that the video will educate and energize Vermonters about adaptation planning at home, in their communities, and beyond.

Our infographic provides a basic definition of 'adaptation' and 'adaptation planning.' It also shows the many different Vermont plans that include Middlebury in their geographic extent. We include plans from the town level all the way up to the mega-regional level of the Northeast. This infographic is meant to show viewers how diverse adaptation plans can be, both in focus and scale. It also drives home the point that there are many overlapping plans in Vermont. Finally, it provides specific resources for learning more about and getting involved in adaptation planning efforts in Vermont.

We hope that both the video and graphic will be useful educational tools for advancing public awareness and enthusiasm around adaptation planning.

Appendix A: Project Resources

Vermont Adaptation Plans

Addison County Regional Planning Commission, *Addison County Regional Plan*, December 2011. http://files.acrpc.org/flipbook/

Amy Sheldon and Middlebury College students, *Conservation Planning for the Town of Middlebury, January 2012.*

EPA Smart Growth Implementation Assistance, "Disaster Recovery and Long-Term Resilience Planning in Vermont," (August 2013). http://accd.vermont.gov/

Lake Champlain Basin Program, *Opportunities for Action: An Evolving Plan for the Lake Champlain Basin,* 2010. www.lcbp.org/

Middlebury Town Planning Commission, *Middlebury Town Plan*, (2012). http://www.townofmiddlebury.org/

Public Service Department, *2011 Comprehensive Energy Plan*, 2011. http://publicservice.vermont.gov/

Resilient Vermont, *Vermont's Roadmap to Resilience: Preparing for Natural Disasters and the Effects of Climate Change in the Green Mountain State*, September 2013. http://resilientvt.files.wordpress.com/

Vermont Agency of Natural Resources Climate Change Team, *Vermont Adaptation White Papers*, 2011. www.anr.state.vt.us/

Vermont Agency of Natural Resources, Division of Forestry, *Vermont 2010 Forest Resources Plan*, 2010. http://www.vtfpr.org/

Vermont Agency of Transportation, *Vermont VTrans Climate Change Action Plan.* 2008. http://vtrans.vermont.gov/

Vermont Department of Environmental Conservation (VT DEC), *Otter Creek Basin Water Quality Management Plan*, May 2012. http://www.vtwaterquality.org/

Vermont Fish and Wildlife Department, *Vermont Wildlife Action Plan.* 2005. http://www.vtfishandwildlife.com/

Vermont Department of Health, *Department of Health Climate Change Adaptation Program*, 2013. http://healthvermont.gov/

Vermont Natural Resources Council (VNRC), *The Energy Planning and Implementation Guide for Vermont Municipalities*. http://vnrc.org/

Appendix A (continued)

Adaptation Plans Outside Vermont

California

California Natural Resources Agency. "California Climate Adaptation Strategy." 2009. http://resources.ca.gov/climate_adaptation/docs/Statewide_Adaptation_Strategy.pdf

Maine

Manomet Climate Change Adaptation Project, Walberg, E., VanDoren, W., Sartoris, J., *Climate Change Adaptation Plan for the Sagadahoc Region of Maine*. Manomet Center for Conservation Sciences, Plymouth, MA. 2013. https://www.manomet.org/

Manomet Climate Change Adaptation Project, Wilkerson, E., Sartoris, J., *Climate Change Adaptation Plan for Allen Whitney Forest, Maine.* Manomet Center for Conservation Sciences, Plymouth, MA. 2013. https://www.manomet.org/

Massachusetts

Manomet Climate Change Adaptation Project, Galbraith, Hector. *Climate Change Adaptation Plan for Century Bog, Plymouth, MA*. Manomet Center for Conservation Sciences, Plymouth, MA. 2013. https://www.manomet.org/

New Hampshire

City of Keene, NH, Climate Resilient Communities Committee, and Local Governments for Sustainability. *Adapting to Climate Change: Planning a Climate Resilient Community*. November 2007.

The Sustainability Project, Tom Sintros. *Forest and Water Climate Adaptation: A Plan for the Ashuelot River Watershed, New Hampshire.* December 2010.

Washington D.C.

Sustainability DC, *Sustainable DC Plan*, 2013. http://sustainable.dc.gov/

Washington D.C. District Department of Transportation, *Climate Change Adaptation Plan*, 2013. http://dc.gov/DC/DDOT/

Washington State

State of Washington Department of Ecology, *Preparing for a Climate Change: Washington State's Integrated Climate Change Response Strategy*, April 2012. https://fortress.wa.gov/ecy/publications/publications/1201004.pdf

Wisconsin

Wisconsin Initiative on Climate Change Impacts (WICCI). Madison, Wisconsin, Nelson Institute for Environmental Studies, University of Wisconsin-Madison and the Wisconsin Department of Natural Resources, *Wisconsin's Changing Climate: Impacts and Adaptation.* 2011.

Appendix A (continued)

Adaptation Plans Outside Vermont (continued)

Northeastern United States

Moser, Suzanne C., Roger E. Kasperson, Gary Yohe, and Julian Agyeman, *Adaptation to Climate Change in the Northeast United States: Opportunities, Processes, Constraints*. July 2007. http://www.northeastclimateimpacts.org/

Canada

City of Toronto, CA. *Ahead of the Storm: Preparing Toronto for Climate Change*. 2008. https://www1.toronto.ca/wps/

Other Resources

Füssel, H.-M. "Adaptation Planning for Climate Change: Concepts, Assessment Approaches, and Key Lessons." *Sustainability Science*, vol. 2, issue 2: 265-275. October 2007. [Online] Georgetown Climate Center. "State and Local Adaptation Plans." Georgetown Law. November 2013. http://www.georgetownclimate.org/adaptation/state-and-local-plans

Headwaters Economics. "Implementing Climate Change Adaptation: Lessons Learned from Ten Examples." Bozeman, MT: Headwaters Economics. February 2012.

Manomet Climate Change Adaptation Project, Walberg, Eric. *Climate Change Adaptation Project Overview*. Manomet Center for Conservation Sciences, Plymouth, MA. 2013. https://www.manomet.org/

Walker, William D., David S. Liebl, Lewis Gilbert, James LaGro Jr., Pete Nowak, and John Sullivan. "Adapting to Climate Change: Why Adaptation Policy is More Difficult than We Think (and what to do about it)." Madison, WI: Adaptation Working Group, Wisconsin Initiative on Climate Change Impacts. October 2010. http://www.wicci.wisc.edu/report/Adaptation.pdf

Vermont Agency of Natural Resources, Vermont Agency of Natural Resources. December 12, 2013. <http://www.anr.state.vt.us/>

Appendix B

We used slight variations of the questions below when interviewing stakeholders. If an interviewee was involved in a separate adaptation planning effort outside of ANR's framework, for example, we focused on that instead.

1. Please introduce yourself and describe your role at [FILL AS APPROPRIATE].
2. What does adaptation mean to you? Resilience?
3. Please describe your involvement with the ANR Climate Change Adaptation Framework.
4. Where would you like to see the Framework go next?
5. What was the most difficult aspect of working on the Framework? Most exciting?
6. What is your knowledge of other climate adaptation plans in Vermont and elsewhere?
7. Did these plans inform or affect your work on the ANR framework?
8. Who should be included in discussions about the ANR framework? Why?
9. How do you see Vermont achieving an adaptive, resilient future?
10. Do you see any obstacles to this future?
11. What conditions are necessary for the success of a climate adaptation framework like ANR's?
12. What is your opinion of the role of policy and public outreach in pursuing climate change adaptation?
13. Is there anything else you would like to share?

Over the course of our interviews, we began to notice trends in interviewees' responses, especially in regards to success and ownership of adaptation frameworks. We added these questions to our list to explore those topics more deeply:

1. What does success for a climate change adaptation framework look like to you?
2. Do you see outcomes for the ANR framework beyond implementation? Are there other uses and/or benefits of the Framework?
3. We have noticed that many people are reluctant to claim ownership over the ANR framework. Why do you think this is?

Appendix C

In order to gain a sense of climate change adaptation in Vermont at an individual level, we interviewed three Addison County, VT business owners whose work is especially dependent on climate and therefore particularly vulnerable to climate change. We simply asked these business owners if climate change is affecting their work. Our interviewees included Andrea Scott, Co-Owner and Market Manager of the eco-apple farm Champlain Orchards; Bay Hammond, Co-Owner and Manager of the diversified organic meat farm DoLittle Farm; and Mike Hussey, Director of Rikert Nordic Ski Center. Through our interviews, it became clear that these business owners are feeling the effects of—and quickly adapting to—climate change. Although clearly overwhelmed by climate change, these interviewees' thoughtful, proactive approaches to combating it suggest that they see themselves as working with the land rather than against it. According to VT ANR's mission statement, this holistic environmental ethic is shared by many Vermonters. Interviewees' reflections about climate change and adaptation are listed below:

Andrea Scott, Champlain Orchards, on diversifying crops in response to climate change:
Our biggest eye opener was the spring before this season. In March all of the sudden it was freaky warm. Things started blooming. Normally peak apple bloom is in mid-May. It was practically a whole month early…We lost 10,000 bushels [of apples]. If things were open at night [when it got cold], in the morning they were just toasted, done. The things most affected were the things most opened up—the earlier varieties. Maybe we shouldn't be planting in cold pockets, or maybe just planting later varieties...Diversifying is really going to help us.

Bay Hammond, DoLittle Farm, on the challenge of farming in the face of climate change:
Climate change and all the storms has been incredibly challenging the last couple of years, to the point where you wonder sometimes if you can really do it anymore. It's hard; you go through springs like last year with all the wet and rain…it's tough on the animals, it's tough on us, it's tough on the ground, on the equipment.

Mike Hussey, Rikert Nordic Ski Center, on artificial snowmaking in response to climate change:
The overarching reason [for snowmaking] is to make this a viable ski area year in and year out. To be able to open our revenue centers—the shop, the rentals, the ski instruction, and tickets—as soon as we can...We may only have 100 yards of snow but we are going to have some snow and get it going. It's the only way we can ensure that we can open our doors. We are looking at adding pieces that keep people enjoying the outdoors and having a good time in the winter months regardless of the depth of snow.

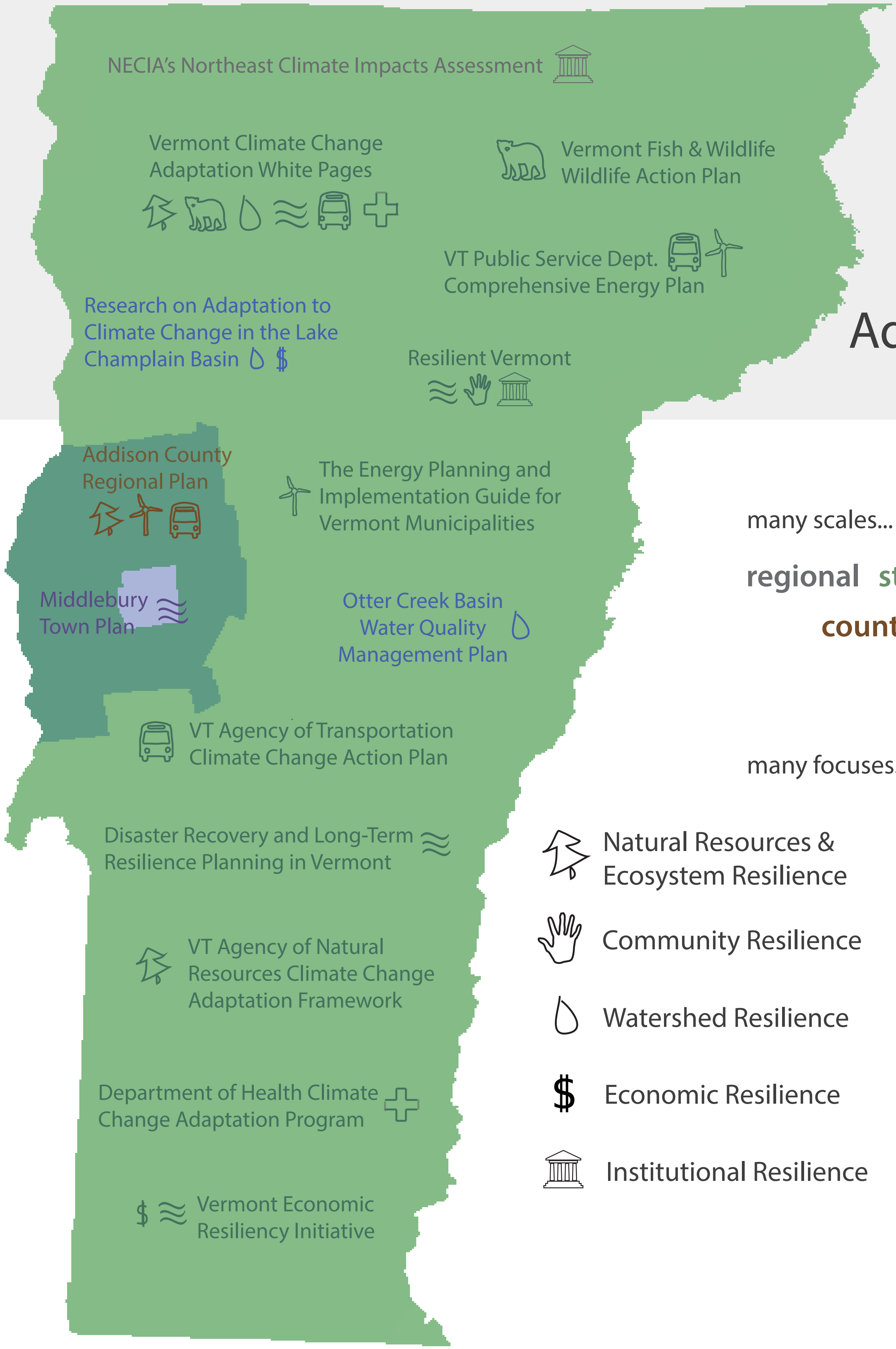
Appendix D

Table 1. Comparison of the characteristics of selected adaptation plans

	PLANNING PROCESS	PLAN CHARACTERISTICS				IMPLEMENTATION MEASURES IN PLAN	
PLAN	**INITIATORS** *AUTHORS* STAKEHOLDERS	PURPOSE (Adaptation, mitigation, etc.)	GEOGRAPHIC EXTENT (State, county, landscape, etc.)	FOCUS (Natural resources, community resilience, disaster preparedness, etc.)	PLAN COMPONENTS (Vulnerabilities assessment, specific adaptation measures, decision-making framework, etc.)	FUNDING	LEADERSHIP
VT ANR Climate Change Adaptation Framework	**VTANR** *Tetratech* Workshops held with range of stakeholders of diverse scientific expertise from: VTANR, other government agencies, and NGOs	Adaptation	**State**: Vermont, potential to be adapted for local use	**Natural resources** - Wildlife - Fisheries - Forestry - Water resources	- Ecosystem vulnerabilities assessment - Adaptation goals - Few specific adaptation measures	Uncertain	Uncertain. Ten stakeholders from framing workshops expressed interest to continue efforts
California Climate Adaptation Strategy	**California Natural Resources Agency (CANRA) under Executive Order by Governor Arnold Schwarznegger** *CANRA* CANRA with support from a panel created by the National Academy of Sciences (NAS)	Mitigation, Adaptation	**State**: California, aims to inform action at multiple scales	**Natural resources** - Wildlife and habitat - Forests **Disaster preparedness** - Sea level rise **Social resilience** - Transportation - Energy and infrastructure - Water management **Economic resilience** - Agriculture	- Ecosystem, human health, agriculture, transportation and energy infrastructure vulnerability assessments - Sea level rise risk assessment - Outline of adaptation strategies at the state level	Uncertain, but required that the government finds a way to fund continued efforts under the Executive Order S-13-08	- CANRA and other government agencies according to specific measure - Ongoing adaptation measures are stipulated by Executive Order S-13-08, which initiated the plan's creation - The adaptation plan can be found on an easily accessible web page that offers local planners a suite of resources to begin adaptation planning in their areas
Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy	**Washington Department of Ecology** *Washington Department of Ecology* and *Cascadia Consulting Group* Four advisory groups made up of a diverse range of individuals from government agencies, educational and health institutions, businesses, non-profits, and local governments with relevant expertise to the four group topics: Built environment, infrastruc-ture, and communities, Human health and security, Ecosystems, species and habitats, and Natural resources (working lands and waters)	Adaptation	**State**: Washington	**Natural resources** - Ecosystems, species, and habitats - Ocean and coastlines - Water resources - Forests **Community resilience** - Public awareness and engagement **Economic resilience** - Agriculture - Infrastructure and built environment	- Ecosystem, human health, infrastructure, agricultural, and ecosystem services vulnerability assessments - Adaptation goals	Uncertain	- Stresses importance of collaboration between governments, federal agencies, tribal governments, research institutes, NGOS, and businesses - Does not assign an agency to monitor or follow through on any adaptation strategy
Wisconsin's Changing Climate: Impacts and Adaptation	**Wisconsin Initiative on Climate Change Impacts (WICCI)** (non-profit) *WICCI* Academic institutions (Nelson Institute for Environmental Studies, University of Wisconsin-Madison), WI Department of Natural Resources, 15 working groups made up of local officials, professional associations, businesses, scientists	Adaptation	**State**: Wisconsin, implementation required at state and local levels	**Natural resources** - Water resources - Natural habitats **Agricultural resilience** - Soil erosion **Social resilience** - Storm water management	- Ecosystem, agriculture, and societal vulnerabilities assessment - Broad adaptation goals - Few specific adaptation measures - Specific implementation principles for local actors	Uncertain	- Report is first of planned series: 15 working groups committed to continued collaboration in WICCI's adaptation planning efforts
Allen-Whitney Memorial Forest Climate Change Adaptation Plan	**Allen-Whitney Forest** (non-profit educational foundation) *Manomet Center for Conservation Science* (non-profit) AWF foresters, Manomet conservation scientists	Adaptation	**Landscape**: Allen-Whitney Memorial Forest, ME	**Natural resources** - Forest - Timber industry	- Ecosystem vulnerabilities assessment - Outline of adaptation goals - Specific adaptation measures	Allen-Whitney Forest	Allen-Whitney Forest foresters

Century Bog Climate Change Adaptation Plan	**MA Department of Fish and Game** *Manomet Center for Conservation Science* (non-profit) Manomet conservation scientists with multiple agencies, non-profits, and a land trust	Restoration (to facilitate adaptation)	**Landscape**: Century Bog, MA	**Natural resources** - Bog (water resource)	- Landscape-specific history - Ecosystem service vulnerabilities assessment - Outline of adaptation goals - Specific adaptation measures	MA Division of Fish and Wildlife (DFW) and Ecological Restoration (DER)	- MA DFW and DER to carry out restoration - Steering committee created during planning process with partner agencies and orgs to continue scientific research, adaptation strategy decision-making, and manage implementation
Forest and Water Climate Adaptation: A Plan for the Ashuelot River Watershed, NH	**Model Forest Policy Program (MFPP)** *The Sustainability Project* Diverse range of individuals and orgs involved, including non-profits (Climate Solutions University (CSU), Emerson Brook Forest), city planners, landscape planners, foresters, water engineers, local officials etc.	Adaptation	**Watershed**: Ashuelot River Watershed, NH	**Natural resources** - Water resources - Forest **Economic resilience** - Ski industry - Recreational fishing	- Ecosystem vulnerabilities assessment - Economic risk assessment - Outline of adaptation goals - Specific adaptation measures	Different sources of funding for each adaptation measure depending on responsible party	- Every adaptation measure has assigned "responsible parties" as well as a projected time frame for completion - Stresses importance of continued collaboration and includes timeline for assessment of progress and re-write of plan (10 years)
Sagahadoc Region Climate Change Adaptation Plan	**Sagahadoc Region municipalities** *Manomet Center for Conservation Science* (non-profit) Manomet conservation scientists and workshops held with 60 stakeholders with diverse range of interests: landscape planners, local officials, scientists	Adaptation	**Regional**: Sagahadoc region, ME, implementation required at local and regional levels	**Natural resources** - Riparian resources - Important habitat areas **Agricultural resilience** - Conservation of farmland **Infrastructure resilience** - Development of green infrastructure	- Summary of existing local adaptation efforts - Ecosystem vulnerabilities assessment - Outline of adaptation goals - Specific adaptation measures	Sagahadoc region municipalities	- Sagahadoc region municipalities - Plan builds upon existing efforts, incorporating climate change adaptation measures into planning efforts already underway
Adapting to Climate Change: Planning a Climate Resilient Community, City of Keene, NH	**City of Keene, Local Governments for Sustainability (ICLEI)** *ICLEI*, ICLEI (non-profit) Climate Resilient Communities (diverse range of city officials), Keene Planning Dept. Staff, and Keene City Council, NOAA climate scientists	Adaptation	**City**: Keene, NH	**Natural resources** - Wetlands and groundwater - Agriculture **Infrastructure resilience** - Building and development - Transportation - Energy systems **Social resilience** - Economy - Public health - Emergency services - Food security	- Community climate vulnerability assessment - Climate adaptation goals	Uncertain - Includes devising financial strategy for implementation as a specific adaptation measure	- Stresses importance of continued collaboration between city departments - Recommends hiring a Sustainability Coordinator - Recommends creating an internal team within city government to focus on adaptation
Sustainability D.C. and Sustainable D.C. Plan	**Sustainable D.C.** (project of D.C. District Government) *Sustainable D.C.* Green Ribbon Committee, comprised of community leaders from public, private, and non-profit sectors, and the Green Cabinet, a committee of agency directors led by the City Administrator	Mitigation, Adaptation	**City**: Washington, D.C.	**Social resilience** - Social justice: access to social services - Community health: clean air, water, and food access - Economic well-being: job creation	- Specific adaptation measures in each of the following categories: Governance, Jobs & Economy, Health & Wellness, Equity & Diversity, Climate & Environment, Built Environment, Energy, Food, Nature, Transportation, Waste, Water - Specific implementation plan	D.C. District government and agencies responsible for implementation measures	- Every specific adaptation measure has an implementation timeframe, and is assigned to a lead agency, and sometimes accompanying partner agencies.

D.C. District Department of Transportation Climate Change Adaptation Plan	**District Department of Transportation (DDOT)** *DDOT* Workshops hosted by American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Administration (FHWA), including representatives from federal, regional, and local agencies and climate science experts	Adaptation	**City**: Washington, D.C.	**Infrastructure resilience** -Transportation	- Infrastructure vulnerabilities assessment - Specific action steps	Uncertain - Continued search for funding included as an action item in the plan	- DDOT in collaboration with relevant actors according to specific action item


NECIA's Northeast Climate Impacts Assessment
Vermont Climate Change Adaptation White Pages
Vermont Fish & Wildlife Wildlife Action Plan
VT Public Service Dept. Comprehensive Energy Plan
Research on Adaptation to Climate Change in the Lake Champlain Basin $
Resilient Vermont
Addison County Regional Plan
The Energy Planning and Implementation Guide for Vermont Municipalities
Middlebury Town Plan
Otter Creek Basin Water Quality Management Plan
VT Agency of Transportation Climate Change Action Plan
Disaster Recovery and Long-Term Resilience Planning in Vermont
VT Agency of Natural Resources Climate Change Adaptation Framework
Department of Health Climate Change Adaptation Program
$ Vermont Economic Resiliency Initiative

Adaptation Plans in Vermont

many scales...

regional **statewide** **watershed**

county **town**

many focuses...

Natural Resources & Ecosystem Resilience

Community Resilience

Watershed Resilience

$ Economic Resilience

Institutional Resilience

Biodiversity

≈ Disaster Recovery & Flood Preparedness

Clean Energy Future

Transportation

Public Health

Vermont ADAPTING

ad·ap·ta·tion (noun) a-ˌdap-ˈtā-shən

Altering your behavior due to an outside influence or reason.

adaptation planning

Adaptation planning is helping Vermont to prepare for an uncertain future by anticipating impacts due to climate change and developing measures to limit their deleterious effects, be they on natural, social, economic, or other kinds of systems. Adaptation planning can be undertaken by anyone, from government agencies, to educational institutions, to towns, businesses or individuals; planning may occur on any level, from regional right on down to household.

Adaptation plans are documents that record the findings of the planning process. They typically include projected impacts due to climate change, and propose steps to combat their harmful effects.

get involved!

1. Contact your local planning commission to learn about adaptation planning in your area.
2. For more information on statewide planning, check out:
   - Agency of Natural Resources' Adaptation Framework: www.anr.gov
   - Resilient Vermont's Adaptation Plan: www.resilientvt.org
3. Contact your state representative to let them know you care about adaptation planning.

By Molly Rose-Williams, Emily Attwood, Olivia French, Andrea Cruz & Camille Seyler - December 2013

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